

Application No. 10/763,135

Amendment Dated April 10, 2011

Reply to final Office Action of January 21, 2011

REMARKS/ARGUMENTS

By this Amendment claims 35, 38, 44, 45, 47, 49-52, 54 and 58-62 are amended. Claims 36 and 63 are cancelled. Claims 64-68 are added. Claims 35, 38-42, 44-52, 54, 58-62 and 64-68 are pending in the application.

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

The Applicants acknowledge that the Examiner has indicated allowable subject matter in claims 36, 40 and 41.

The Examiner rejects claims 35, 38, 39, 42, 44-48, 54 and 61-63 under 35 U.S.C. 103(a) as being unpatentable over Fellenstein et al. (U.S. Patent No. 7,406,691B2) (Fellenstein), in view of Barsness et al. (U.S. Patent No. 7,379,884 B2) (Barsness), and further in view of Chen et al. (U.S. Pub. No. 2003/0009580) (Chen).

The Examiner believes that Fellenstein in view of Barsness does not teach allocating resources in accordance with the monetary penalty amount specified by a service level agreement. However, the Examiner believes that Chen teaches that the quality of service depends on the terms of a service level agreement between the user and the service domain, processed by the controller into a set of policies to be applied, and that the policies include dynamic selection and allocation of the network resources so as to transmit the data stream with the expected quality of service. The Examiner also believes that Chen teaches allocating resources based on the penalties and monitoring pre-defined service requirements, and that the monetary penalty is specified in the SLA.

Furthermore, the Examiner believes that it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Fellenstein in view of Barsness with Chen to include penalty cost in the SLA in order to economically allocate a resource based on the penalties associated with the problem.

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In the Applicants' invention a number of nodes in a cluster execute applications pursuant to a service level agreement (SLA). When the terms of the SLA cannot be met, more servers are requested from a remote domain. The decision whether to allocate more servers to meet the demand is negotiated on the basis of dollar amounts as specified by the SLAs, rather than basing the decision only on the conventional calculations of the actual computing resources. In making these decisions the Applicants' invention considers factors such as the dollar cost of not meeting a requirement of the SLA, including the SLA specified dollar penalties for not meeting the requirements of the SLA, the dollar costs of accepting the resources granted, etc.

More specifically, the decision whether to allocate additional servers depends on the dollar value of the penalties as set by the SLA for not meeting the requirements of the SLA. Thus, the Applicant's system may intentionally fail to meet a requirement of an SLA if it determines that it is more cost effective to do so, in spite of the monetary penalties imposed by the SLA for doing so.

Chen teaches a system for controlling QoS according to terms of an SLA between a user and a service domain. Furthermore, Chen teaches a resource management scheme for directly linking SLAs with policy control when enforcing SLAs for enabling dynamic selection and reconfiguration of resources in a network. Thus, Chen's SLAs are incorporated into the QoS resource management protocol. The SLAs are used to facilitate a close association between predefined service requirements and constraints on the performance of the networks. As cited by the Examiner, Paragraph [0017] of Chen states:

...For example, it allows operations staff to prioritise diagnosis and problem resolution issues, such as reallocating the QoS resources based on penalties associated with the problems. (Emphasis added)

Additionally, Paragraph [0035] of Chen states:

QoS control and resource management in each network domain is performed by applying Policy-based QoS resource control and management where the policies are derived from SLA's to reflect

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the constraints over the selection, allocation and performance of the network bearers, the corresponding cost and even the associated penalties that are defined in the Intra-domain SLA's. (Emphasis added)

A search of Chen reveals that the foregoing are the only two references to “penalties” that appear. However, the Applicants submit that a close reading of these paragraphs does not reveal any reference to money. Therefore, even though Chen teaches that penalties are associated with the SLAs, Chen does not teach that the associated penalties referred to are monetary penalties.

In fact, a search of Chen reveals that Chen is completely silent with respect to “money,” “dollars” or “values.”

Additionally, Chen makes two references to the “costs” associated with an SLA. See Paragraph [0016] which states:

Furthermore SLA's ensure that customers have a clear understanding of QoS expectations and the associated costs. The ability to measure and manage service quality enables service providers to offer different classes of service. Still furthermore, SLA's facilitate the achievement of Policy-based QoS resource management. (Emphasis added)

Paragraph [0035] of Chen states:

QoS control and resource management in each network domain is performed by applying Policy-based QoS resource control and management where the policies are derived from SLA's to reflect the constraints over the selection, allocation and performance of the network bearers, the corresponding cost and even the associated penalties that are defined in the Intra-domain SLA's. (Emphasis added)

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However, neither of these two references to the “costs” associated with the SLA teaches that the “costs” referred to are monetary costs. In fact, there is not teaching whatsoever that the “costs” are monetary costs in Chen.

Furthermore, while there is no teaching that the “costs” are monetary costs, several other costs associated with an SLA are taught in Chen. For example, Chen refers to competitive costs (not allowing service providers to differentiate their QoS from their competition), monitoring and communicating performance to customers, determining what traffic is allowed to access the network, and determining what traffic is discarded if there is congestion. The Applicants respectfully submit that it is unlikely that Chen would list some costs associated with the SLAs, and leave out monetary costs, if it was intended that monetary costs should be considered in making decisions regarding allocation of resources.

Therefore, the Applicants again submit that Chen does not teach allocating a sever node in accordance with a monetary penalty amount for failure to meet a requirement of a service level agreement, as required by claims 61 and 62. Accordingly, claims 61 and 62 are believed to be allowable.

Furthermore, in the Applicants invention the remote domain can make a counter offer to the requesting node operating pursuant to the service level agreement. When the requesting node receives the counter offer, it can make a determination whether to accept the counter offer according to the service level agreement. For example, if the cost of using the resources specified in the counter offer exceeds the penalties specified by the service level agreement for not meeting the terms of the agreement, the requesting node may elect to violate the agreement and pay the penalty. Therefore, the requesting node can allocate the resource specified in the counter offer according to the service level agreement.

Therefore, new claim 64 recites a method for supporting an application workload using a resource at a remote domain, the method including monitoring execution of the application workload to determine whether a threshold performance requirement of a service level agreement is met. Responsive to a determination that the threshold performance requirement of

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the service level agreement is not met, a request is sent for a resource. A counter offer from the remote domain specifying a resource differing from the requested resource is received. The resource specified by the remote domain in the counter offer is allocated according to the service level agreement.

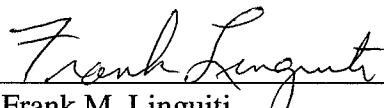
Fellenstein, Barsness and Chen do not teach or suggest allocating a resource specified by a remote domain in a counter offer according to a service level agreement, as recited in new claim 64. Therefore, claim 64 is also believed to be allowable. Furthermore, the remaining independent claims depend either directly or indirectly from allowable claim 64 and are believed to be allowable for at least the same reasons.

For at least the reasons set forth above, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are respectfully requested.

Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

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Respectfully submitted,
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